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09/634,123	08/08/2000	Alok Aggarwal	JP920000226US1	4050

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EXAMINER

MOORE JR, MICHAEL J

ART UNIT	PAPER NUMBER
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2666

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DATE MAILED: 04/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/634,123

Applicant(s)

AGGARWAL ET AL.

Examiner

Michael J. Moore, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 and 19-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3,7,10,14,21 and 25 is/are allowed.
- 6) ☒ Claim(s) 4,6,11,13,22 and 24 is/are rejected.
- 7) ☒ Claim(s) 1,2,5,8,9,12,15,19,20 and 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

The amendments made to the specification and the claims in the amendment by applicant submitted on 03/02/2004 are proper and have been entered by the examiner.

However, new objections and rejections follow.

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract of the disclosure is objected to because of the word "said" used on lines 5, 6, 7, 9, 10, and 11. Correction is required. See MPEP § 608.01(b).

Claim Objections

3. Claims 1, 2, 5, 8, 9, 12, 15, 19, 20, and 22-24 are objected to because of the following informalities:

Regarding claim 1, the period should be removed after the word "procedure" at the end of line 4. On line 8, it is believed that the phrase should read, "remaining nodes

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as Slave-designates; and". These changes also apply to claims **2**, and **4-6**. Also, on line 14, "Master-designate" should be "Master-designates".

Regarding claim **2**, on line 16, the word "least" is missing between the words "at" and "one". On lines 17 and 18, the word "cluster" should be "clusters". Also, on line 19, the word "an" should be "a".

Regarding claim **5**, on line 17, the word "transmitted" should be "transmitting".

Regarding claim **8**, on line 16, "Master-designate" should be "Master-designates".

Regarding claim **9**, on line 17, the word "least" is missing between the words "at" and "one". On lines 18 and 19, the word "cluster" should be "clusters". Also, on line 20, the word "an" should be "a".

Regarding claim **12**, on line 17, the word "responses" is missing between the words "of" and "received". Also, on line 18, the word "transmitted" should be "transmitting".

Regarding claim **15**, on line 2 it is believed that the word "carrying" should be "carry".

Regarding claim **19**, on line 5 the word "an" is not needed. On line 12, it is believed that the phrase should read, "a statistical procedure and defining remaining nodes as Slave-designates; and". Also, on line 18, the word "Master-designate" should be "Master-designates".

Regarding claim **20**, on line 5, the word "an" is not needed. On line 11, it is believed that the phrase should read, "a statistical procedure and defining remaining nodes as Slave-designates; and". On line 17, the word "wherein" is typed twice. On

line 18, the word "Master-designate" should be "Master-designates". On line 20, the word "cluster" should be "clusters". Lastly, on line 21, the word "an" should be "a".

Regarding claim **22**, on line 5, the word "an" is not needed. On line 11, it is believed that the phrase should read "a statistical procedure and defining remaining nodes as Slave-designates; and". These changes also apply to claims **23 and 24**.

Regarding claim **23**, on line 19, the word "transmitted" should be "transmitting". Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims **4, 11, and 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Callaway, Jr. et al. (U.S. 6,275,500) in view of Ray et al. (U.S. 6,587,455) and in further view of Karaoguz et al. (US 2002/0059434).

Regarding claims **4, 11, and 22**, Callaway, Jr. et al. discloses the defining of master and slave nodes and the defining of clusters containing these nodes with the piconet 15 in Figure. This piconet has a master device 2 connected to several slave devices 1, 3, 4, 5, 6, 8, and 9, which constitutes a cluster. Callaway, Jr. et al. discloses the exchanging of inquiry messages and inquiry responses between master and slave nodes for connection purposes in Figures 3 and 5. Figure 3 shows a master 2 that is sending an inquiry message to slaves 1 and 12. Figure 5 shows slaves 1 and 12 sending inquiry responses to master 2.

Callaway, Jr. et al. does not disclose the transmitting of packet bits during device discovery in order to separate the nodes into transmit-state and receive-state and to convey node state. However, Ray et al. discloses an 8-bit opcode used within a message for either a request state or a reply state in Figure 4. This message format of Figure 4 is used for the automatic discovery of nodes associated with a subnet. Callaway, Jr. et al. also does not disclose a Slave-designate inquiry scan interval being set close to duration of a scan window. However, Karaoguz et al. shows an inquiry scan procedure performed by a Bluetooth slave in Figure 7. Figure 7 shows an inquiry scan interval of 2.56 sec and a scanning window of 11.25 ms. Since the "scan window" of claim **4** is not further defined previously in the claim, this "scan window" can be

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interpreted broadly to be the same as the inquiry scan interval. Therefore, the inquiry scan interval of 2.56 sec of Karaoguz et al. teaches this limitation.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art given these references to use packet bits of Ray et al. to set node state in the method of Callaway, Jr. et al. as well as to use an inquiry scan interval of Karaoguz et al. with the inquiry message exchange of the Callaway, Jr. et al. reference. A motivation for doing so would be to allow each node to be aware of other nodes that are associated with the same subnet as stated in column 1, lines 55-59 of the Ray et al. reference as well as to use an inquiry scan procedure defined in the Bluetooth standard.

7. Claims **6, 13, and 24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Callaway, Jr. et al. (U.S. 6,275,500) in view of Ray et al. (U.S. 6,587,455) and in further view of Mitra et al. (U.S. 6,331,986).

Regarding claims **6, 13, and 24**, Callaway, Jr. et al. discloses the defining of master and slave nodes and the defining of clusters containing these nodes with the piconet 15 in Figure. This piconet has a master device 2 connected to several slave devices 1, 3, 4, 5, 6, 8, and 9, which constitutes a cluster. Callaway, Jr. et al. discloses the exchanging of inquiry messages and inquiry responses between master and slave nodes for connection purposes using a procedure in Figures 3 and 5. Figure 3 shows a master 2 that is sending an inquiry message to slaves 1 and 12. Figure 5 shows slaves 1 and 12 sending inquiry responses to master 2.

Callaway, Jr. et al. does not disclose the transmitting of packet bits during device discovery in order to separate the nodes into transmit-state and receive-state and to

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convey node state. However, Ray et al. discloses an 8-bit opcode used within a message for either a request state or a reply state in Figure 4. This message format of Figure 4 is used for the automatic discovery of nodes associated with a subnet. Callaway et al. also does not disclose that the procedure used to define Master-designates includes Bernoulli trials executed by each node. However, Mitra et al. discloses the use of Bernoulli trials as a procedure for allowing the arrival of call streams for routing purposes in a virtual private network in column 8, lines 30-42. The use of Bernoulli trials is thus a known mathematical procedure used in the art.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art given these references to use packet bits of Ray et al. to set node state in the method of Callaway, Jr. et al. as well as to use the Bernoulli trials of Mitra et al. with the piconet setup methods of the Callaway, Jr. et al. reference. A motivation for doing so would be to allow each node to be aware of other nodes that are associated with the same subnet as stated in column 1, lines 55-59 of the Ray et al. reference as well as to use a known procedure to establish a piconet.

Allowable Subject Matter

8. Claims 1-3, 5, 7-10, 12, 14, 15, 19, 20, 21, 23, and 25 are allowable over the prior art of record.

Regarding claim 1, the prior art of record teaches "a method for organizing a set of nodes into a minimum number of connected clusters in a wireless transmission system, said method comprising steps of: using of bits in packets used in the initial stages of a device discovery procedure, to include information relating to a state of said

nodes during the initial stages of the procedure; setting parameters in the procedure for device discovery to achieve a separation of the nodes into those in a transmit-state and a receive-state; defining Master-designates among said nodes through a statistical procedure and defining remaining nodes as a Slave-designate; defining clusters including said Master-designates and at least one said Slave-designate, wherein said Slave-designate continuously scans for an inquiry message transmitted from said Master-designate and said Slave-designate transmits an inquiry response to said Master-designate upon receiving said inquiry message to establish a connection between said Master-designate and said Slave-designate." The prior art of record fails to teach, "wherein at least one Super-master-designate is selected from said Master-designates and at least one Proxy-slave is selected for each Master-designate."

Regarding claim 2, the prior art of record teaches the method as described in the paragraph regarding claim 1. The prior art of record fails to teach "wherein at least one Super-master-designate is selected from said Master-designates and at least one Proxy-slave is selected for each Master-designate, said method further comprising a step of communicating between said Super-master-designate of one of said clusters and said Proxy-slave of other of said clusters such that said Super-master-designate collects information of said clusters from each of said Proxy-slave having a predetermined ID.

Regarding claim 3, this claim is further limiting to claim 1 and is thus also allowable over the prior art of record.

Regarding claim 5, the prior art of record teaches the method as described in the paragraph regarding claim 1. The prior art of record fails to teach "wherein said bits in said packet include information selected from the group consisting of numbers of responses received by said node by a predetermined period, numbers of said nodes included in said cluster, whether or not said node transmitting said inquiry response is included in said cluster, and whether or not said node transmitting said inquiry response is said Master-designate."

Regarding claim 7, this claim is further limiting to claim 1 and is thus also allowable over the prior art of record.

Regarding claim 8, the prior art of record teaches "a system for organizing a set of nodes into a minimum number of connected clusters of bounded size in a wireless transmission system, said system comprising: means for using of bits in packets used in the initial stages of a device discovery procedure, to include information relating to a state of said nodes during the initial stages of the procedure; means for setting parameters in the procedure for device discovery to achieve a separation of the nodes into those in a transmit-state and a receive-state; means for defining a Master-designate among said nodes through a statistical procedure and defining remaining nodes as a Slave-designate; and means for defining a cluster including said Master-designate and at least one said Slave-designate, wherein said Slave-designate continuously scans for an inquiry message transmitted from said Master-designate and said Slave-designate transmits an inquiry response to said Master-designate upon receiving said inquiry message to establish a connection between said Master-designate and said Slave-

designate." The prior art of record fails to teach "wherein at least one Super-master-designate is selected from said Master-designates and at least one Proxy-slave is selected for each Master-designate."

Regarding claim **9**, the prior art of record teaches the system as described in the paragraph regarding claim **8**. The prior art of record fails to teach "wherein at least one Super-master-designate is selected from said Master-designate and at least one Proxy-slave is selected for each Master-designate, said system further comprising means for communicating between said Super-master-designate of one of said clusters and said Proxy-slave of other of said clusters such that said Super-master-designate collects information of said clusters from each of said Proxy-slave having a predetermined ID."

Regarding claim **10**, this claim is further limiting to claim **8** and is thus also allowable over the prior art of record.

Regarding claim **12**, the prior art of record teaches the system as described in the paragraph regarding claim **8**. The prior art of record fails to teach "wherein said bits in said packets include information selected from the group consisting of numbers of responses received by said node by a predetermined period, numbers of said nodes included in said cluster, whether or not said node transmitting said inquiry response is included in said cluster, and whether or not said node transmitting said inquiry response is said Master-designate."

Regarding claim **14**, this claim is further limiting to claim **8** and is thus also allowable over the prior art of record.

Regarding claim **15**, this claim is further limiting to claim **14** and is thus also allowable over the prior art of record.

Regarding claim **19**, the prior art of record teaches "a computer program product having a computer readable medium having a computer program recorded therein for organizing a set nodes into a minimum number of connected clusters of bounded size in a wireless transmission system, said computer program product including: computer program code means for using of bits in packets used in an initial stage of a device discovery procedure, to include information relating to a state of said nodes during the initial stages of the procedure; computer program code means for setting parameters in the procedure for device discovery to achieve a separation of the nodes into those in a transmit-state and a receive-state; computer program code means for defining a Master-designate among said nodes through a statistical procedure and defining remaining nodes as a Slave-designate; and computer program means for defining a cluster including said Master-designate and at least one said Slave-designate, wherein said Slave-designate continuously scans for an inquiry message transmitted from said Master-designate and said Slave-designate transmits an inquiry response to said Master-designate upon receiving said inquiry message to establish a connection between said Master-designate and said Slave-designate." The prior art of record fails to teach "wherein at least one Super-master-designate is selected from said Master-designates and at least one Proxy-slave is selected for each Master-designate."

Regarding claim **20**, the prior art of record teaches the computer program product as described in the paragraph regarding claim **19**. The prior art of record fails

to teach "wherein at least one Super-master-designate is selected from said Master-designate and at least one Proxy-slave is selected for each Master-designate, said computer program further comprising means for communicating between said Super-master-designate of one of said clusters and said Proxy-slave of other of said clusters such that said Super-master-designate collects information of said clusters from each of said Proxy-slave having a predetermined ID."

Regarding claim **21**, this claim is further limiting to claim **19** and is thus also allowable over the prior art of record.

Regarding claim **23**, the prior art of record teaches the computer program product as described in the paragraph regarding claim **19**. The prior art of record fails to teach "wherein said bits in packets include information selected from the group consisting of numbers of responses received by said node by a predetermined period, numbers of said nodes included in said cluster, whether or not said node transmitting said inquiry response is included in said cluster, and whether or not said node transmitting said inquiry response is said Master-designate."

Regarding claim **25**, this claim is further limiting to claim **19** and is thus also allowable over the prior art of record.

Conclusion

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kumar (U.S. 6,640,268), Hill et al. (U.S. 6,381,467), Haartsen (U.S. 6,590,928), Haartsen et al. (U.S. 6,570,857), Haas (U.S. 6,304,556), Perlman et al. (U.S. 5,574,860), Aiello et al. (US 2002/0018458), Fischer et al. (U.S. 6,513,082),

Thompson (U.S. 6,192,397), and Van Gasteren et al. (U.S. 6,243,771) are all references that contain material pertinent to this application.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Moore, Jr. whose telephone number is (703) 305-8703. The examiner can normally be reached on Monday-Friday (8:30am - 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema S. Rao can be reached at (703) 308-5463. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael J. Moore, Jr.
Examiner
Art Unit 2666

mjm MM



EXAMINER
MICHAEL J. MOORE, JR.